

REMARKS

Claims 1-162 remain in the application. Claims 22-79 and 102-162 are withdrawn as directed to a non-elected invention, election having been made in the response filed October 1, 2007. Claims 1, 80, 100 and 101 have been amended, and claim 97 has been cancelled in order to more clearly define applicant's invention. No new matter has been introduced.

The specification has been objected to because; the word "doubting" needs to be replaced with "doubling" in paragraph [0034]. The specification has been reviewed, but applicant was unable to locate the error.

The Examiner has objected to claim 97 as duplicative of claim 96, and has noted that claims 100 and 101 refer to "method" in the preamble, and should refer to "system" to provide proper antecedent basis. Claim 97 has therefore been canceled, and claims 100 and 101 have been amended to overcome the objections. Accordingly, the objection should be overcome.

Claims 1-2, 9-20, 80-81 and 88-100 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 6,264,610 to Zhu. Claims 3-4, 82 and 83 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhu in view of US Patent No. 4,509,368 to Whiting. Finally, claim 5-8, 21, 84-87 and 101 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhu in view of US Patent No. 5,713,356 to Kruger. These rejections are respectfully traversed and reconsideration is requested in view of the foregoing amendments and following remarks.

Mammography based upon X-ray transmission through breast tissue has been the standard method of screening for breast cancer for three decades. While the mainstay of breast cancer detection, there are a number of issues with its use including reliability, subjectivity, ionizing radiation, expense and geometry (requiring flattening of the breast).

Applicant's claim 1 recites a method of detecting the presence of malignant tissue within a region of interest within a living body, wherein the malignant tissue is characterized by one or more physical manifestations differentiating it from normal

tissue, comprising: acquiring spatial data with respect to the region of interest using at least three separate probing methods of commensurate resolution. The three separate probing methods are selected from the group comprising ultrasonic probing, electrostatic probing, diffusive IR probing, and photo-acoustic probing, each probing method being of the type that senses the presence of malignant tissue within the region of interest by sensing at the presence of a physical manifestation associated with the malignant tissue. The method also includes co-registering the acquired spatial data from all of the probing methods so as to improve the receiver operating characteristics of detection performance. Claim 80 includes similar system limitations. The claimed subject matter provides a screening system and technique that will (a) detect even small tumors with a relatively higher probability, while also suffering a relatively smaller false indication probability, (b) process the data entirely without human intervention, (c) employ non-ionizing radiation, (d) enable low-cost instruments which can be used in doctors' offices and clinics, and (e) conform naturally to the breast to avoid discomfort.

It is submitted that the cited references neither anticipate nor make obvious applicant's system and technique. The two modalities offered by Zhu are not equivalent to any two recited in claims 1 and 80. In particular, the NIR technique is not capable of the resolution offered by photo-acoustic imaging. Although both employ IR illumination, scattering of NIR with subsequent optical sensing has very low spatial resolution; the photo-acoustic effect is conversion of optical energy to acoustic, which is then received by the same acoustic array as is being used for ultrasonic imaging. Thus, the two techniques suggested by Zhu do not offer commensurate resolution. Thus, Zhu is incapable of confirming measurement data element-by-element.

In the present application, to achieve the advantageous results, the resolution of each of the probing methods must be commensurate with each other, such that confirming information regarding malignancy can be made locally in the tissue. Zhu's wording is "within a region"; however, since NIR does not have the same resolution as ultrasonic, the "region" cannot mean "voxel-by-voxel" in our sense.

Whiting describes an ultrasound tomography system for use in diagnostics includes paired couples of transmission transducers and reflection transducers. However, Whiting fails to teach a data acquisition subsystem constructed and arranged so as to acquire spatial data with respect to the region of interest using at least three separate probing methods of commensurate resolution, each sensing modality being of the type that senses the presence of malignant tissue within the region of interest by sensing at the presence of a physical manifestation associated with the malignant tissue. Whiting thus fails to overcome the shortcomings of Zhu.

Kruger describes a method and apparatus for measuring and characterizing the localized electromagnetic wave absorption properties of biologic tissues in vitro, using incident electromagnetic waves to produce resultant acoustic waves. Kruger fails to suggest a data acquisition subsystem constructed and arranged so as to acquire spatial data with respect to the region of interest using at least three separate probing methods of commensurate resolution, each sensing modality being of the type that senses the presence of malignant tissue within the region of interest by sensing at the presence of a physical manifestation associated with the malignant tissue. Thus, Kruger fails to overcome the shortcomings of Zhu.

In summary therefore, claims 1-21, 80-96 and 98-101, the remaining claims in the application are believed to be allowable. An early and favorable action thereon is therefore earnestly solicited.

In connection with the foregoing matter, please charge any additional fees which may due, or credit any overpayment, to Deposit Account Number 50-1133.

Respectfully submitted,

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